

**DESCRIPTION OF MALE
RHYOTHEMIS PHYLLIS APICALIS KIRBY, 1889
(ANISOPTERA: LIBELLULIDAE)**

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The ♂ allotype is described and illustrated from the Northern Province of New Caledonia, and compared with the *R. p. phyllis* from Thailand. The habitats of *R. p. apicalis* are described and a list of odon. spp. recorded during the 1999 and 2000 surveys is added.

INTRODUCTION

Rhyothemis phyllis apicalis is known from New Caledonia and Vanuatu (formerly New Hebrides). KIRBY (1889) described the holotype female from New Hebrides as a separate species, and the female was redescribed by RIS (1913, as a subspecies of *R. phyllis*). LIEFTINCK (1975) confirmed his description. Other references to this taxon were made by TEPPER (1899), MARTIN (1901), RIS (1915), KIMMINS (1936, 1958), DAVIES (2002) and MEURGEY (2006). The male apparently remained so far unknown.

The male allotype is described below. *R. phyllis apicalis* can be separated from the nominotypical subspecies by colour of the face, wing venation, wing spots and by structure of the anal appendages.

In addition, a list is appended of the species recorded from New Caledonia by two surveys, viz. in 1999 (funded by Northern Province, carried out during the dry season) and in 2000 (carried out by Falconbridge NC SAS mining company, during the low water season).

RHYOTHEMIS PHYLLIS APICALIS KIRBY, 1889

Figures 2, 5, 7

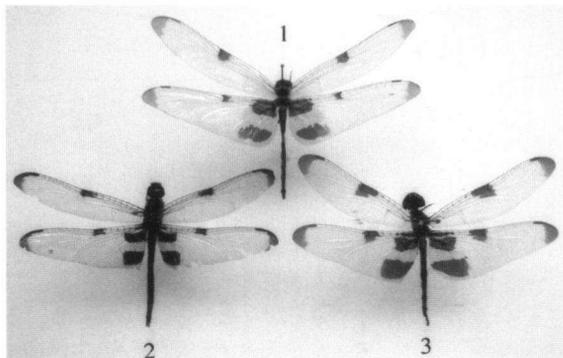
Material. – **Allotype** ♂: New Caledonia, Province Nord, Koné, Barrage anti-sel, 20-XI-1999; deposited in author's collection. – **Other specimens:** 2 ♂, New Caledonia, Province Nord, Koné, Rivière La Confiance, 7-X-2000; – 1 ♀, New Caledonia, Province Nord, Koné, Rivière La Népia, 20-XI-1999. – **Note:** Because of their poor condition of preservation, the 2 Confiance ♂ cannot be considered as paratypes.

FEMALE (allotype). – **Head.** – Labium brown-blackish; labrum wholly black; anteclypeus and postclypeus yellow-greenish; antefrons yellow-greenish; postfrons black; vertex black; antennae black; occiput black.

Thorax. – Evenly black, with bluish metallic glints.

Legs rather sturdy, black; base of femura brown.

Wings: apex of the wings rather rounded, giving the insect a quite stocky appearance. Number of antenodal cross-veins: Fw $9\frac{1}{2}$ (100%); Hw either 6



Figs 1-3. Habitus: (1) *Rhyothemis p. phyllis*, male (Thailand: Maetha, Lamphun); – (2) *R. phyllis apicalis*, male (New Caledonia: Koné, anti-salt dam); – (3) same, female (New Caledonia, Koné, Népia).

the first and the third antenodal cross-vein, the subcostal space between the first and the second antenodal cross-vein, the cubital space, the triangle, the distal half of the supratriangle, the first cells of the anal loop, the first cells of the anal field up to the membranule, and the first cells between MA and the anal loop; yellow spot, between the two brown spots, filling two rows of long cells of the anal field, and not passing the distal end of the brown spots; posterior spot brown, covering the end of the anal loop and of the anal field, leaving a yellow two-cell margin along the posterior edge of the wing (Figs 2-3, 5).

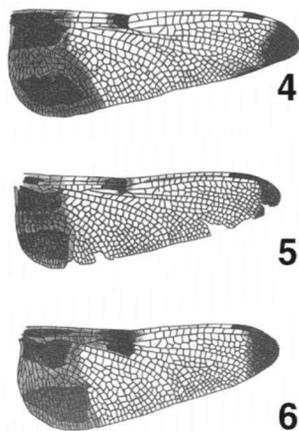
Abdomen. – Cylinder-shaped, evenly dull black, without metallic glints. Anal appendages: cerci black, distal half rather thickened, denticles of the ven-

Number of antenodal cross-veins: Hw either 6 (50%) or 7 (50%). Apical spot rather narrow, dark brown, starting at the distal end of the pterostigma. Nodal spot reduced, starting at the eighth antenodal cross-vein and ending halfway between the nodus and the first post-nodal cross-vein; it fills the subnodal space up to R2 and beyond, surrounds the bridge cross-vein. Basal spot in Hw: anterior spot brown, covering the posterior half of the costal space between

tral base of the distal half relatively small. Epiproct black, passing clearly the denticles of the cerci (Fig. 7).

Measurements (mm). – Total length 36.5; abdomen 24; Fw 32.5; Hw 30.

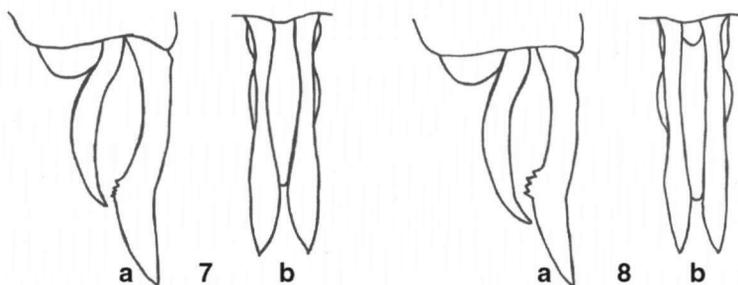
HABITAT. – The three sites (Koné, Confiance and Népia) are located within the Northern Province of New Caledonia, on the lower courses (elevation below 50 m) of the river, draining an area that consists mainly of peridotite and serpentinite rocks, characterized by low turbidity (ca 1 NTU) and a pH close to 8. The Népia and Confiance catchments are small (below 30 km²) and the land there is uninhabited, hence their organic pollution is small. The Koné locality, on the other hand, lies close to the river mouth, at the anti-salt dam that prevents the intrusion of sea water. The drainage basin exceeds 150 km² and the river is subjected to anthropogenic impact from human and animal occupation.



Figs 4-6. Right hindwing: (4) *Rhyothemis p. phyllis*, male; – (5) *R. phyllis apicalis*, male; – (6) same, female.

DISCUSSION

The *R. p. apicalis* male is slightly smaller than the female, the hindwing of which can reach a length of 32 mm. The wing spots of the male are clearly more reduced than those of the female, in which the apical spot counts many more cells, the nodal spot reaches posteriorly R4+5, the anterior basal spot reaches the third antenodal cross-vein in the costal and subcostal spaces, and the posterior basal spot passes clearly the anal loop (Figs 3, 6).



Figs 7-8. Anal appendages: (7) *Rhyothemis phyllis apicalis*, male; – (8) *R. p. phyllis*, male (a) lateral view, (b) dorsal view.

The apex of the wings in *R. p. apicalis* is slightly rounder than that of *R. p. phyllis* which seems more slender. Two features of the wing spots differentiate the two taxa, in agreement with RIS (1913) and KIRBY (1889): (1) the yellow strip crossing the basal spot of the hindwing is narrower in *R. p. apicalis* than in *R. p. phyllis*; (2) in *R. p. apicalis*, only the subcostal and cubital spaces are wholly brown, the costal space being partly coloured, in *R. p. phyllis*, three basal spaces (subcostal, median and cubital) are wholly coloured by brown (Figs 1, 4). RIS (1913) notes that *R. p. apicalis* is a form smaller than *R. p. phyllis*. In addition, *R. p. apicalis* has, on average, fewer antenodal cross-veins, Fw $9\frac{1}{2}$ and Hw 6 or 7, as against Fw $10\frac{1}{2}$ (very rarely $9\frac{1}{2}$) and Hw 7 (very rarely 6) in *R. p. phyllis*. Regarding the face, the labium in *R. p. apicalis* is very dark, brown-blackish, whereas it is bright yellow in *R. p. Phyllis*. Similarly, clypeus and anterior part of the frons are yellow-greenish in *R. p. apicalis* and yellow-whitish in *R. p. phyllis*. Finally, the cerci in *R. p. apicalis* males have a thicker distal part, the denticles on its ventral base are smaller and the epiproct is shorter than in the *R. p. phyllis* male (Figs 7, 8).

LIST OF ODONATA SPECIES COLLECTED DURING THE TWO SURVEYS

The objective of the 1999 and 2000 surveys was the analysis of water quality of the rivers, based on benthic macroinvertebrate fauna. Most of the recorded odonate species are apparently rather common in New Caledonia.

Coenagrionidae:

- *Agricnemis exsudans* Sélys, 1877: Ile des Pins (6-VII-2000)
- *Ichnura heterosticta* (Burmeister, 1839): Koné (20-XI-1999)

Isostictidae:

- *Isosticta gracilior* Lieftinck, 1975: Yate (5-X-2000)
- *Isosticta tillyardi* Campion, 1921: Koumac (22-XI-1999)

Megapodagrionidae:

- *Caledopteryx maculata* Winstanley & David, 1982: Yate (29-X-1999)
- *Caledopteryx sarasini* (Ris, 1915): Koumac (22-XI-1999)
- *Trineuragrion percostale* Ris, 1915: Mont-Doré (18-X-1999)

Corduliidae:

- *Hemicordulia fidelis* MacLachlan, 1886: Ile des Pins (6-VII-2000); – Koné (7-X-2000)

Libellulidae:

- *Diplacodes haematoides* (Burmeister, 1839): Koumac (22-XI-1999); – Ile des Pins (6-VII-2000); – Kone (7-X-2000); – La foa (22-XI-1999)
- *Rhyothemis phyllis apicalis* Kirby, 1889: Koné (20-XI-1999); – Koné (7-X-2000)
- *Orthetrum caledonicum* (Brauer, 1865): Koumac (22-XI-1999); – Mont-Doré (18-X-1999)
- *Tamea transmarina intersecta* Lieftinck, 1975: Pouembout (8-X-2000)

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